REMARKS

Applicants have amended claims 1, 10, and 19, and have added new claims 32-36 as set forth above. No new matter has been added by way of these amendments. Applicants note with appreciation the Office's indication that claims 6, 15, and 25 are allowable over the prior art of record. In view of the above amendments and the following remarks, reconsideration of the outstanding office action is respectfully requested.

The Office has rejected claims 1-5, 7, 9-14, 16, 18-24, and 26-28 35 U.S.C. 103(a) as being unpatentable over US Patent Application Publication No. 2002/0192680 to Chan et al. (Chan) and claims 29-31 under 35 U.S.C. 103(a) as being unpatentable over Chan in view of US Patent 6,876,683 to Watanabe et al. (Watanabe). The Office asserts that Chan teaches a method and system for controlling one or more temperature dependent properties (namely reflectance spectra, paragraph 58, page 5) of a structure (a photonic band-gap microcavity, paragraph 58, page 5): heating (with a heating system that heats) at least a portion of a photonic band-gap structure (paragraph 76, page 7, wherein the photonic band-gap structure is silicon layers of a microcavity), and oxidizing (with an oxidizing system that oxidizes) the at least a portion of the photonic band-gap structure during the heating (paragraph 76, page 7) to alter at least one temperature dependent optical property of the photonic band-gap structure (paragraph 58, page 5). The Office asserts that Chan does not expressly teach that that the heating (with a heating system that heats) comprises annealing the at least a portion of the photonic band-gap structure, but asserts does teach a rather slow process of heating (over a 10 minute span, paragraph 76, page 7). The Office asserts that after the heating process of Chan is complete, the device is allowed to cool (by the mere exclusion of maintaining heat). The Office asserts this process of heating and cooling may reasonably referred to as an annealing process. Additionally, the Office asserts Chan does not teach that the oxidizing system oxidizes the at least a portion of the photonic band-gap structure in a mixture comprising N2 and 02, but asserts Watanabe teaches oxidizing in a mixture comprising N2 and 02 (column 5, lines 52-57). The Office asserts that it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the oxidizing system of Chan with the mixture of Watanabe because the motivation would have been to reduce costs, since this mixture would include readily available air.

Neither Chan nor Watanabe, alone or in combination, disclose or suggest, "the annealing to having at least a warming stage for a first controlled period of time, a heating

stage for a second controlled period of time, and a cooling stage for a third controlled period of time" as recited in claim 1, "the annealing system having at least a warming stage for a first controlled period of time, a heating stage for a second controlled period of time, and a cooling stage for a third controlled period of time" as recited in claim 10, or "wherein the stack is annealed by at least warming the stack for a first controlled period of time, heating the stack for a second controlled period of time, and cooling the stack for a third controlled period of time" as recited in claim 19.

As the Office has acknowledged, "Chan does not expressly teach that that the heating (with a heating system that heats) comprises annealing the at least a portion of the photonic band-gap structure." Additionally, the Office has asserted, "After the heating process of Chan is complete, the device is allowed to cool (by the mere exclusion of maintaining heat)." In support of these propositions, the Office cites to paragraph 76 in Chan which states:

> After anodization, the porous silicon samples are thermally oxidized in a flowing dilute oxygen environment at 900.degree. C. for 10 minutes. This provided an oxide surface that was subsequently used for the immobilization chemistry in the fabrication of the biosensor.

However, there is absolutely no teaching or suggestion in Chan on any controlled first period of time for warning stage before the heating stage or of a controlled third period of time for the cooling stage. Instead, as disclosed in Chan and as acknowledged by the Office, Accordingly, as set forth in Chan and as acknowledged by the Office, Chan only discloses and suggest placing a porous silicon sample directly from its initial state into a 900 degree environment for ten minutes, with no discussion of a warming stage, a controlled period of time for a warming stage, or of any controlled period of time for a cooling stage. As a result, the porous silicon sample will be subjected to excessive stresses. Like Chan, Watanabe does not teach or suggest any of these claims limitations.

In sharp contrast, one example of this annealing process in accordance with embodiments of the present invention is disclosed in paragraph 30 in the above-identified patent application which states, "By way of example only, in this particular embodiment the PBG structure 16 is: (1) warmed up at an edge of the chamber 14 in the furnace 12 for about four minutes; (2) pushed to the center of the chamber 14 over a period of about one minute and thirty seconds; (3) left in the center of the chamber 14 for about three minutes; (4) pulled out from the center of the chamber 14 over a period of about one minute and thirty seconds;

and (5) cooled down at an edge of the chamber for about four minutes, although other parameters for this annealing process can be used." Accordingly, the PGB structure is subjected to warming for a controlled period of time, heating for a controlled period of time, and then cooling for a controlled period of time. Additionally, as disclosed in paragraph 30 in the above-identified patent application, "This heating or annealing process should provide a sufficient warm up/cool down period and a long enough push and pull of the PBG structure 16 to and from the center of the chamber 14 so that excessive stresses in the PBG structure 16 are not generated from exposure to a high thermal gradient" (Emphasis Added).

Accordingly, in view of the foregoing amendments and remarks, the Office is respectfully requested to reconsider and withdraw the rejection of claims 1, 10, and 19. Since claims 2-5, 7, 9, and 29 depend from and contain the limitations of claim 1, claims 11-14, 16, 18, and 30 depend from and contain the limitations of claim 10, and claims 20-24, 26-28, and 31.

Applicants have also added new dependent claims 32-36 which are believed to be in condition for allowance. A notice to that effect is respectfully requested.

In view of all of the foregoing, Applicants submit that this case is in condition for allowance and such allowance is earnestly solicited.

Respectfully submitted,

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